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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/043,709	01/09/2002	Kuo-Yu Chou	67,200-603	6454

7590 01/29/2003

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EXAMINER

LE, THAO X

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/043,709

Applicant(s)

CHOU ET AL.

Examiner

Thao X Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 25-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 13-16 have been renumbered 25-28.

Election/Restrictions

2. Applicant's response on 12/09/02 in Paper No. 3 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

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(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

1. Claims 1, 3-4, 8, 11 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6198170 to Zhao

Regarding to claim 1, Zhao discloses a method for forming a wiring bond pad utilized in wire bonding operation on an integrated circuit (IC) device comprising the steps of: configuring a wiring bond pad to comprise a single metal layer 410, fig. 4 column 10 line 37, wherein single metal layer 410 does not share with any other material, and positioning at least one IC, column 10 line 15, below wiring bond pad 410 to thereby conserve IC space and improve wiring bond pad efficiency as a result of configuring wiring bond pad to comprises a single metal layer 410.

Regarding to claims 3, 4, Zhao discloses a method for forming a wiring bond pad further comprising the step of: locating single metal layer 410 above a plurality of inter-metal dielectric layers 422, 420, 418, 416, and 414, fig. 4 column 14 line 29-31, further comprising at least one IC device below plurality of inter-metal dielectric layers, column 10 line 15.

Regarding to claims 8, 11 Zhao discloses a method for forming a wiring bond pad wherein the single metal layer 410 comprises a copper layer, column 14 line 25, having a thickness of approximately 10KA°, column 14 line 56.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2, 5-7, 9-10, 12, 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6198170 to Zhao in view of US 6417088 to Ho et al.

Regarding to claims 2, 9-10, 12, Zhao does not disclose the method further comprises a aluminum buffer layer and bonding layer immediately above single metal layer, wherein the aluminum buffer layer having the thickness in a range of 10KA° - 20KA° .

However, Ho reference discloses the method for forming a wiring bond pad, fig. 6 comprises a aluminum buffer layer 52, column 3 line 3, and bonding layer 60, column 4 line 53, immediately above metal layer 30, wherein the aluminum buffer layer having the thickness in a range of 5000A° , column 4 line 35. Accordingly, it would have been obvious to one of ordinary skill in art to use buffer layer 52 teaching of Ho in the range as claimed, because it has been held that where the general conditions of the claims are discloses in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Furthermore, such buffer layer would have increased the adhesion between the { bond pad and bonding layer as taught by Ho, column 4 line 30-32.

Regarding to claims 5-7, Zhao does not disclose wherein single metal layers comprises metal-8 layer and at least IMD-1 to IMD-7 layers

But, Zhao discloses the method for forming a wiring bond pad wherein single metal layers comprises metal-4 layer or more, column 10 line 33, having multilevel of IMD, 422, 420, 418, 416, and 414, fig. 4 column 14 line 29-31, and copper layer, column 14 line 28. At the time the invention was made; it would have been obvious to one of

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ordinary skill in the art to use more than four level teaching of Zhao as claimed, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding to claims 25, 27-28, Zhao discloses a method for forming a wiring bond pad utilized in wire bonding operation on an integrated circuit (IC) device comprising the steps of: configuring a wiring bond pad to comprise a single metal layer 410, fig. 4 column 10 line 37, wherein single metal layer 410 does not share with any other material, and positioning at least one IC, column 10 line 15, below wiring bond pad 410 to thereby conserve IC space and improve wiring bond pad efficiency as a result of configuring wiring bond pad to comprises a single metal layer 410, locating wiring bond pad above a plurality IMD layers, 422, 420, 418, 416, and 414, fig. 4 column 14 line 29-31.

But, Zhao does not disclose the IMD layers are IMD-1 to IMD-7 layers, and forming an aluminum buffer film having a thickness in a range of 10KÅ-20KÅ, and a bonding layer

However, Ho reference discloses the method for forming a wiring bond pad, fig. 6 comprises a aluminum buffer layer 52, column 3 line 3, and bonding layer 60, column 4 line 53, immediately above metal layer 30, wherein the aluminum buffer layer having the thickness in a range of 5000Å, column 4 line 35. Accordingly, it would have been obvious to one of ordinary skill in art to use buffer layer 52 teaching of Ho and Zhao IMD layers in the range as claimed, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the

optimum or workable range by routine experimentation. See *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Furthermore, such buffer layer would have increased the adhesion between the bond pad and bonding layer as taught by Ho, column 4 line 30-32.

Regarding to claim 26, Zhao discloses a method for forming a wiring bond pad wherein the single metal layer 410 comprises a copper layer, column 14 line 25, having a thickness of approximately 10KA°, column 14 line 56.

Response to Arguments

3. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X Le whose telephone number is 703-306-0208. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Thao X. Le
January 23, 2003

Handwritten signature of Ngan Van Ngo, consisting of a stylized 'N' followed by 'g' and 'o', with a checkmark and another mark to the right.

Ngan Van Ngo
Primary Examiner